

H. S. ROBINSON.  
Apparatus for Cleansing and Bleaching Textile  
Fabrics.

No. 205,140.

Patented June 18, 1878.

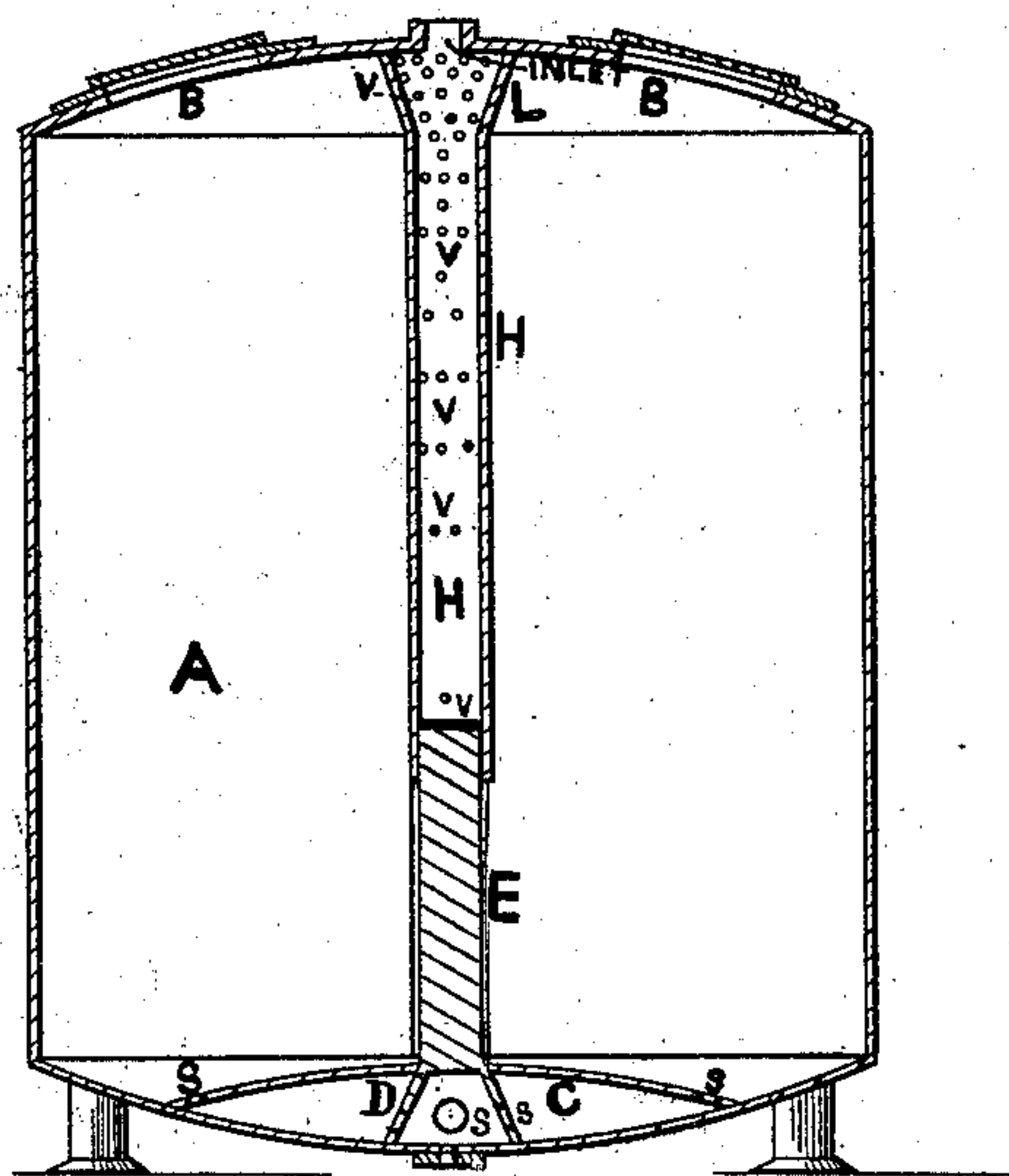


Fig. 1.

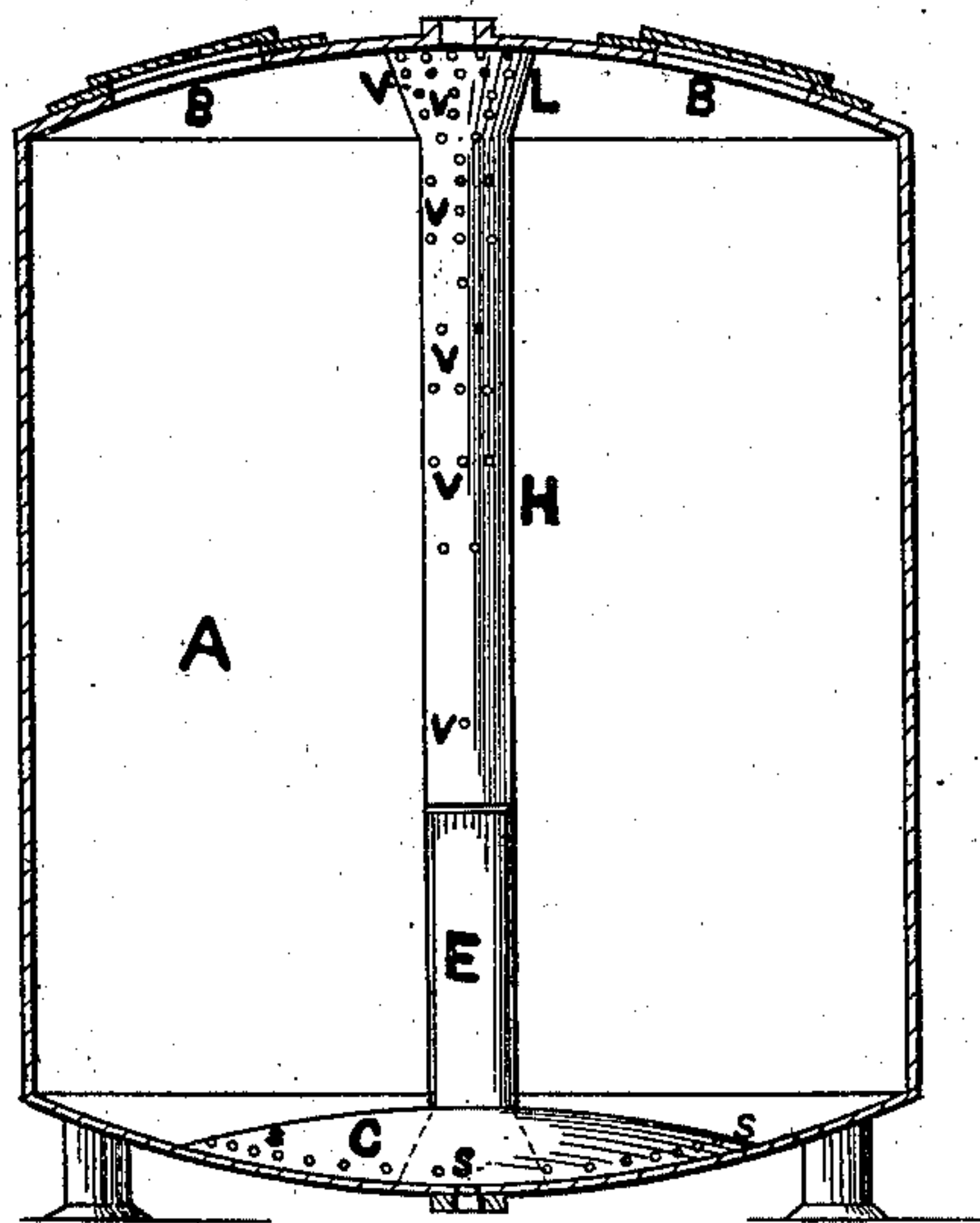


Fig. 2.

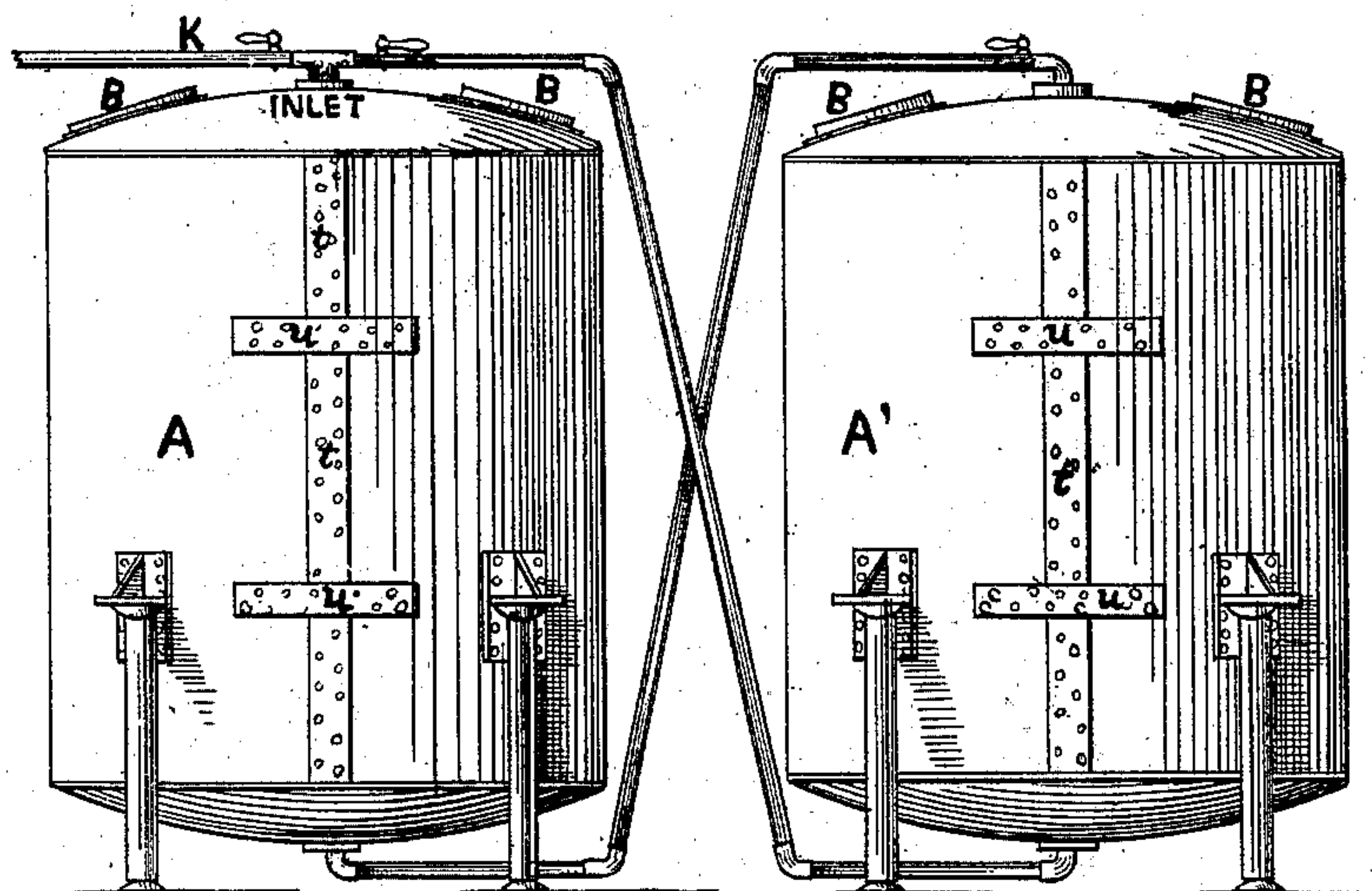


Fig. 3.

Witnesses:

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Inventor:

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Att'y



# UNITED STATES PATENT OFFICE.

HENRY S. ROBINSON, OF BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN APPARATUS FOR CLEANSING AND BLEACHING TEXTILE FABRICS.

Specification forming part of Letters Patent No. **205,140**, dated June 18, 1878; application filed August 10, 1877.

*To all whom it may concern:*

Be it known that I, HENRY S. ROBINSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Apparatus for Bleaching and Cleansing Textile Fabrics, of which the following is a specification:

The object of my invention is to so distribute the bleaching and cleansing liquid upon and through the textile fabrics and materials being bleached and cleansed as to more effectually and evenly bleach and cleanse the same; and a further object is to so distribute the bleaching and cleansing liquid upon and through the textile fabrics or materials as to prevent the discoloration or ash-staining of any portion of such fabrics, in consequence of such fabrics rising or being forced above the bleaching-liquid, thereby causing ash-staining and discoloration of such parts as become too dry, so as not to be sufficiently acted upon to remove the discoloration from the parts which fail to receive continuous saturation, while the main portions are completely bleached, as is frequently the case, when the apparatus is such as now in general use and known as the "Barlow kiers."

I find, after many experiments, that the "ash-staining," so called, may be prevented, and all discolorations may be completely removed from the entire bulk of textile fabrics simultaneously, when the bleaching-liquid is distributed so as to insure all portions of the fabrics to receive continuous saturation during the entire bleaching-liquid discharge from the distributor, pipe, or tube.

My invention is designed to overcome the imperfections and objections existing in bleaching apparatus heretofore; and it consists, essentially, in the construction of the perforated distributing-tube or distributor of the bleaching-liquid, in such manner that a very large proportion of such liquid shall be discharged upon the top of the pack of goods or textile fabrics placed in the kier, and but little in the body or bulk of the same. Instead of discharging the greater portion of the bleaching liquid into the body or lower portions of the fabrics, as heretofore, wherein the distributor is uniformly perforated from near the bottom to the top, as in the Barlow kier, or wherein

the liquor is all discharged or poured upon the top of the goods when the open kiers are employed.

In order to fully accomplish the best results, I construct the distributor with a series of perforations, commencing at or near the middle of the same, with two or four small holes, then increase the size of the next series of four holes, and at the next point above make eight holes, and so on, reducing the space vertically between each succeeding series of holes and gradually increase their number toward the top, where I provide a conical or inverted-cone-shaped section, so as to allow for a more rapid increase in the number of holes and like decrease of space intervening between the series of holes until the top or upper end is reached, as is hereinafter more fully described and explained.

Figure 1 is a vertical section of a kier constructed according to my invention. Fig. 2 is a similar view of the kier, the distributor being shown in full. Fig. 3 is a side elevation, showing a pair of kiers as connected together for use.

A A' represent the kiers, which are made in four vertical strips of boiler-plate, being riveted together and strengthened by stay-pieces *t* and straps *w*. The rivet-heads should be countersunk upon the inside, so as to avoid projections to injure the goods. B B represent man-holes in each kier. These are provided with the usual appendages for closing the same steam-tight. These man-holes are used for packing and unpacking the goods. C is a crown-plate placed in the bottom of each kier, and is of less diameter than the cross-section of the kier, and with its convex side uppermost, its edge or perimeter resting upon the concave surface of the kier, leaving a space underneath the plate C, into which fluids can escape through the perforations *s* into the pipe beneath. The center of this plate C is supported upon the conical part D of the central tube or support E, which may be solid or closed up to the lower holes V in the distributor H, which is connected to the top of the support E, as shown. This distributor-tube H is provided with several series of small holes, V V'. The lower ones, V, are placed about one-third the distance of the interior height of the kier



above the crown-plate C, and are designed to allow the liquid to flow from the distributor-tube H to empty the same. The next series are made somewhat larger, and are located above the center portion of the interior of the kier, and each succeeding series placed nearer to the previous series, and the number of holes increased in each series until the inverted cone L is reached, where they increase more rapidly in number to the top of the same, which connects with the top of the kier. This cone L contains one-half or more of the perforations V of the distributor.

The vertical perforated distributor H L receives the bleaching-liquid from a pipe, K, leading to a boiler or other receptacle, so as to communicate the requisite steam, heat, and pressure as required heretofore in conjunction with the bleaching-liquid. These steam-pipes are provided with the necessary valves to control the flow of the liquids and steam and discharge of the same from one kier to the other, as heretofore employed in similar kiers. Therefore I will not describe such in detail or illustrate it in the drawings, it being no part of my invention.

The two kiers A A', as shown, are filled with the goods to be bleached or acted upon, being packed upon the convex plates C C' and upon each side of the vertical tube E and the perforated distributor H, keeping the same highest around the distributor or in the center of the kiers. The man-holes being closed, steam is admitted into both kiers through the perforated distributors to the top and interior of the goods, forcing out the air and water through the blow-off valve, (not shown;) and when the textile fabrics or materials have been sufficiently treated the steam is shut off, and the bleaching and cleansing liquid, properly heated, is forced or pumped into kier A, pouring through the perforations V in the distributor H, a very large portion passing through the cone-part L, and thus falling on the top of the goods they are all thoroughly and simultaneously saturated, and are thereby prevented from rising or being thrown up in the kier, so as to remain above the liquid, especially

the top portions, when any light fabrics are being bleached, causing them to become ash-stained and otherwise injured by disarranging and tangling of the same, so as to prevent their ready removal without liability of being torn and otherwise injured, as heretofore.

When the goods in kier A have been sufficiently treated with the bleaching-liquid steam is admitted into the same and the valves are opened and closed, so as to force the liquid from the bottom of kier A into the top of kier A', when the same operation takes place as before, and this same liquid may in turn be forced from this kier back into the former one until the goods are sufficiently bleached.

The essential feature of my invention consists in constructing the distributor so that the area of all the holes below the top of the pack of goods shall be so much less than the area of the inlet-pipe that the larger portion of the liquid must be discharged upon the top of the goods, and the total area of all the holes in the distributor only slightly in excess of the area of the inlet-pipe, and the larger portion above the top of the cylindrical part of the kier, so that all the holes shall be filled with liquid during the time it is being discharged into the kier, by means of which all the goods are saturated simultaneously, thereby materially reducing the time required to bleach the same.

I am well aware of English Patent No. 1,904, granted Abraham Taylor, December 23, 1872, for bleaching apparatus; therefore I broadly disclaim such.

Having thus described my invention, what I claim is—

In a kier for bleaching, the distributor, as herein described, consisting of a tube perforated with numerous holes, increasing in number or area from below upward, so that the liquid will be principally spread upon the top of the goods to be bleached, as and for the purposes set forth.

HENRY S. ROBINSON.

Witnesses:

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